IN THE CLAIMS:

1. (currently amended) A method for producing CT images of a patient's heart suitable for calcification scoring, the heart having a cardiac cycle;

said method comprising the steps of:

acquiring data representative of a first scout-scanned CT image of physical locations of the patient's body including at least a portion of the patient's heart at phases $\phi_1(L)$ of the cardiac cycle;

acquiring data representative of a second scout-scanned CT image of the physical locations of the patient's body including at least a portion of the patient's heart at phases $\phi_2(L)$ of the cardiac cycle different from $\phi_1(L)$;

determining a difference image from the acquired data representative of the first scout-scanned CT image and the acquired data representative of the second scout-scanned CT image data[.];

performing calcification scoring based on the difference image; and

[producing] outputting at least one of a calcification score and CT images of the patient's heart based on the calcification scoring.

2. (original) A method in accordance with Claim 1 wherein the patient is holding his or her breath during both said image acquiring steps.

3. (original) A method in accordance with Claim 1 further comprising the step of identifying calcification deposits on portions of the difference image corresponding to moving body structures of the patient.

4. (original) A method in accordance with Claim 3 wherein said step of identifying calcification deposits is performed utilizing computer image processing.

5. (original) A method in accordance with Claim 3 wherein identifying calcification deposits on portions of the difference image corresponding to moving body structures of the patient comprises comparing intensities of neighboring pixel

groups of the difference image to identify differences in intensity above a threshold indicative of calcification.

6. (original) A method in accordance with Claim 5 wherein identifying calcification deposits further comprises scoring an amount of calcification in accordance with differences in image intensities.

7. (original) A method in accordance with Claim 1 further comprising the step of processing the difference image to enhance appearance of calcification deposits.

8. (original) A method in accordance with Claim 1 further comprising the step of monitoring an EKG signal of the patient's heart to determine trigger times for acquiring the data representative of the first image and the data representative of the second image at different phases of the cardiac cycle.

9. (currently amended) A method in accordance with Claim 1 wherein both steps of acquiring data are performed [at the same time] by utilizing different detector rows of a multi-slice CT imaging system.

10. (original) A method in accordance with Claim 9 wherein the CT imaging system comprises a table configured to move the patient during a scout scan, and further comprising the step of adjusting a rate at which the table moves during said data acquiring steps in accordance with a heart rate of the patient.

11. (original) A method in accordance with Claim 10 wherein the multi-slice CT imaging system comprises at least three detector rows, and said method further comprises the steps of acquiring noise estimation information including data representative of a third scout-scanned image, and estimating background noise in the difference image utilizing the noise estimation information.

12. (original) A CT imaging system for obtaining images of a patient's heart suitable for calcification scoring, the heart having a cardiac cycle;

said system configured to:

acquire data representative of a first scout-scanned CT image of physical locations of the patient's body including at least a portion of the patient's heart at phases $\phi_1(L)$ of the cardiac cycle;

acquire data representative of a second scout-scanned CT image of the physical locations of the patient's body including at least a portion of the patient's heart at phases $\phi_2(L)$ of the cardiac cycle different from $\phi_1(L)$; and

determine a difference image from the acquired data representative of the first scout-scanned CT image and the acquired data representative of the second scout-scanned CT image data.

13. (original) A system in accordance with Claim 12 further configured to identify calcification deposits on portions of the difference image corresponding to moving body structures of the patient.

14. (original) A system in accordance with Claim 13 configured to identify calcification deposits utilizing computer image processing.

15. (original) A system in accordance with Claim 13 wherein said system being configured to identify calcification deposits on portions of the difference image corresponding to moving body structures of the patient comprises said system being configured to compare intensities of neighboring pixel groups of the difference image to identify differences in intensity above a threshold indicative of calcification.

16. (original) A system in accordance with Claim 15 wherein said system being configured to identify calcification deposits further comprises said system being configured to score an amount of calcification in accordance with differences in image intensities.

17. (original) A system in accordance with Claim 12 further configured to process the difference image to enhance appearance of calcification deposits.

18. (original) A system in accordance with Claim 12 further configured to monitor an EKG signal of the patient's heart to determine trigger times for acquiring the data representative of the first image and the data representative of the second image at different phases of the cardiac cycle.

19. (currently amended) A system in accordance with Claim 12 having a multi-slice detector, said system being configured to acquire both the data representative of the first image and the data representative of the second image [at the same time] by utilizing different detector rows of said multi-slice detector.

20. (original) A system in accordance with Claim 19 further comprising a table configured to move the patient during a scout scan, and further configured to adjust a rate at which the table moves during scout-scanned data acquisition in accordance with a heart rate of the patient.

21. (original) A system in accordance with Claim 20 wherein said multi-slice detector comprises at least three detector rows, and said system is further configured to acquire noise estimation information including data representative of a third scout-scanned image, and to estimate background noise in the difference image utilizing the noise estimation information.

22. (previously presented/currently amended) A method for facilitating calcification scoring, said method comprising:

imaging a heart at a first phase of a cardiac cycle to obtain a first image;

imaging the heart at a second phase of the cardiac cycle to obtain a second image, wherein the second phase is different from the first phase, and wherein the first and second images are obtained at the same physical location in a single scan;

determining a difference image using the first and second images; [and]

identifying calcification deposits on portions of the difference image that correspond to moving body structures of the patient; and

performing calcification scoring based on the difference image.

23. (previously presented) A method in accordance with Claim 22 further comprising instructing the patient to hold his or her breath during imaging.

24. (canceled)

25. (previously presented/currently amended) A method in accordance with Claim [24] 22 wherein the calcification deposits are identified utilizing computer image processing.

26. (previously presented/currently amended) A method in accordance with Claim [24] 22 wherein identifying calcification deposits on portions of the difference image that correspond to moving body structures of the patient comprises comparing intensities of neighboring pixel groups of the difference image to identify differences in intensity above a threshold indicative of calcification.

27. (previously presented) A method in accordance with Claim 26 wherein identifying calcification deposits further comprises scoring an amount of calcification in accordance with differences in image intensities.

28. (previously presented) A method in accordance with Claim 22 further comprising processing the difference image to enhance appearance of calcification deposits.

29. (previously presented) A method in accordance with Claim 22 further comprising:

monitoring an EKG signal of the patient's heart to determine trigger times for imaging the heart to obtain a first image; and

imaging the heart to obtain a second image at different phases of the cardiac cycle.

30. (previously presented) A method in accordance with Claim 22 wherein imaging the heart to obtain a first image and imaging the heart to obtain a second image are performed by utilizing different detector rows of an imaging system.

31. (previously presented) A method in accordance with Claim 30 wherein the imaging system includes a table configured to move the patient during imaging, said method further comprises adjusting a rate at which the table moves during imaging in accordance with the cardiac cycle of the patient.

32. (previously presented) A method in accordance with Claim 31 wherein the imaging system includes at least three detector rows, said method further comprises:

acquiring noise estimation information including data representative of a third image; and

estimating background noise in the difference image utilizing the noise estimation information.